1988

Insects on Trees and Shrubs

Cooperative Extension South Dakota State University

FS 851

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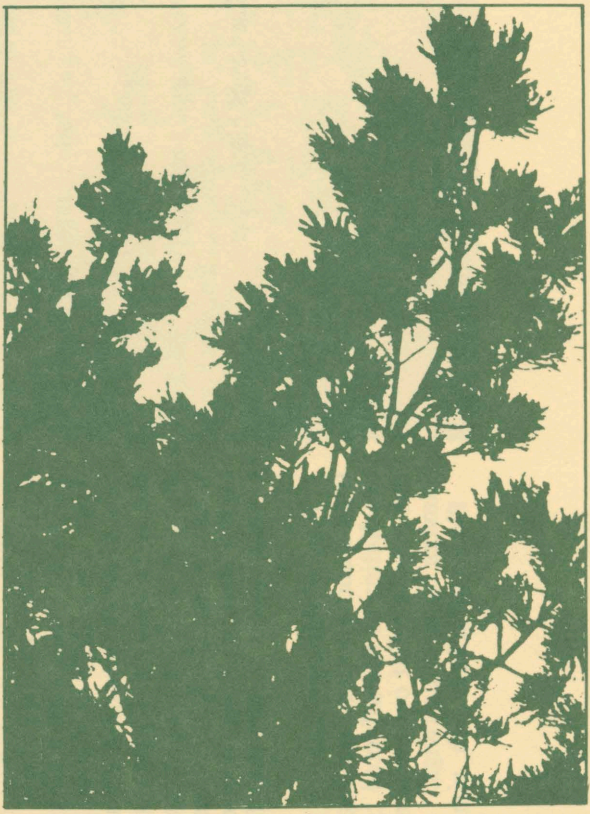

Cooperative Extension Service
South Dakota State University
U.S. Department of Agriculture

Insects on Trees and shrubs

Benjamin H. Kantack
Extension entomologist

Trees and shrubs, because they add so much value and beauty to our environment, should be protected from any excessive damage that insects can inflict on them.

If there is a pest on your trees or shrubs that you can not positively identify, talk to your county Extension agent, who will also be able to recommend control procedures if they are necessary.

A larva is the immature form of the insect; often a "worm" in popular terminology. Some larvae (and adults) may be strikingly beautiful. In some cases, the larval stage of the insect is responsible for the damage we see on trees and shrubs.

It is important for you to identify the insect and assess the damage you can tolerate before initiating any control measures.

Leaf insects

Leaf beetles

Appearance. The elm leaf beetle is a very common pest of elms in South Dakota. The adult beetle is about ¼ inch long and yellowish to olive-green with a black, sometimes indistinct, stripe along the margin of the wing covers. Eyes are black; antennae and legs are yellowish.

Larvae, when full grown, are ½ inch long and dull yellow with two black stripes down the back. Both adults and larvae may severely skeletonize a tree.

The cottonwood leaf beetle is easily recognized by the eight black spots on its yellow wing covers. The adult is ¼ to ⅓ inch long. Larvae, on first hatching, are dark black in color and become progressively lighter as they grow and molt. These leaf beetles attack cottonwood, poplar, and willow. They often are regarded as South Dakota's number one enemy of poplars and willows.

The spotted willow leaf beetle is somewhat similar to the cottonwood leaf beetle, and frequently the two may be found feeding together. This beetle is deep black beneath, and the background color of some individuals is red instead of yellow. Wing covers are marked with rows of square or transverse black spots. Size is 3/16 to ⅓ inch long. Larvae are similar in appearance to that of the cottonwood leaf beetle.

Type of damage. The leaf beetles are notorious for the amount of leaf feeding and "skeletonizing" of foliage they do. Able to produce several generations a year, they can cause widespread damage from early spring until fall.

Plants attacked. Elm leaf beetle: elm. Spotted willow leaf beetle and cottonwood leaf beetle: willow, poplar, cottonwood.

Cankerworms

Appearance. There are two species of cankerworms in South Dakota. One attacks shrubs and trees in the spring and is known as the spring cankerworm. The other attacks in the fall and is known as the fall cankerworm. Larvae are similar in appearance and habits and are often called "measuring worms" because they loop their bodies when moving about. Larvae are about 1 inch long and brown to brownish-green.

Type of damage. Larvae damage trees by eating the leaves, sometimes completely stripping the tree.

Plants attacked. Primarily elm, although other shade trees and fruit trees are attacked.

Fall webworm

Appearance. These worms leave conspicuous gray webs that enclose the tips of branches. Webworms (about 1 inch long, pale yellow with black spots) feed entirely within the web.

Type of damage. Webworms are not usually considered a serious pest. The portion of the branch within the web usually becomes defoliated, and the webbing is unsightly.

Plants attacked. Cottonwood, poplar, aspen, willow, oak, several shrubs.

Tent caterpillars

Appearance. Two species of tent caterpillars are of importance in South Dakota. The eastern tent caterpillar constructs a silken tent in the crotch of a tree. The caterpillars are dark gray or black with a white line along the side. They congregate in the "tent" during adverse weather or while resting, although they may feed beyond the confines of the tent.

The forest tent caterpillar does not make a silken tent, but the larvae live and feed together. A larva has a row of diamond or oval-shaped white spots down the midline of the back.

Type of damage. Tent caterpillars are serious defoliators of shade trees. The larvae are very active and do a large amount of feeding.

Plants attacked. Many deciduous shade trees and some fruit trees.

Walnut caterpillar

Appearance. Full grown larvae are approximately 2 inches long, black, and covered with long, gray hairs. Younger larvae are brick-red to dark red-brown, with pale yellowish-gray, lengthwise stripes.

Type of damage. Larvae are very serious defoliators of host trees and, when abundant, completely strip the trees.

Plants attacked. Walnuts and hickories.

Yellow-necked caterpillar

Appearance. The caterpillar reaches a length of 2 inches when fully grown and has a very noticeable yellow spot just behind the head. Yellow stripes run along the length of the body. Larvae have a tendency to congregate in crotches and on larger branches of the tree.

Type of damage. Often this caterpillar becomes locally abundant in groves and shelterbelts. Serious injury can result when the larvae devour the foliage.

Plants attacked. Birch, basswood, cherry, elm, apple, hawthorn, oak, other deciduous trees.

Tussock moth

Appearance. Tussock moth larvae are easily recognized by their prominent color and markings. Four tufts of short, white, erect hairs are very noticeable on the back. Two bright red spots are present on the back toward the rear end. Two long tufts of black hair project from the head, one on each side.

Type of damage. Damage is caused by larvae defoliating the tree.

Plants attacked. Almost all fruit and shade trees.

Spiny elm caterpillar

Appearance. The full-grown caterpillar is approximately 2 inches long and is black with a row of red dots down the middle of the back. The most prominent features of the larvae are the heavy, branched, black spines.

Type of damage. On occasion, populations become abundant enough to cause serious injury to trees, especially in shelterbelts.

Plants attacked. Elm, willow, poplar, hackberry.

Timing of insecticide treatments for insects on trees and shrubs.

Host	*Insect*	*Time to apply*
Ash	Borer	Spray trunks and lower branches three times, beginning May 15, at 3-week intervals. Wrap trunks.
	Leaf feeders	When damage noticed.
	Flower gall mite	When blooms first appear.
Birch	Borer	Spray trunks and branches in mid-May, early June, and early July. Water and fertilize trees.
	Scale	Apply when eggs hatch, about June 1.
Boxelder	Boxelder bugs	When bugs are noted on trees.
Cedar	Spider mites	Spray when spider mites are found by tapping branches over white paper. Infestation can occur from late May to late October.
Cherry, Plum	Aphids	When colonies are well established.
	Scale	When eggs hatch, usually early June.
	Peach tree borers	Apply to lower trunk and soil around July 4, July 30, and August 15.
Cotoneaster	Webworm	When webs appear.
Elm	Elm scale	Spray when eggs start hatching and again 10 days later.
	Aphids	When colonies become established.
	Cankerworm	Spray early spring when pinhole worm feeding is noticed.
	Tussock moth, Spiny elm caterpillar etc.	Spray when worms are observed.
	Elm leaf beetle	Spray June 15 and again on July 15 and as larvae collect at trunk base.
	Bark beetle	Spray mid-April.
Hackberry	Nipple gall	As leaf buds show green and again 10 days later.
Lilac	Borers	Prune out infested canes, spray May 20, and repeat every 3 weeks for three applications.
Linden	Lace bugs , Aphids, Leafhoppers	When insects are present and leaves show injury.

Host	*Insect*	*Time to apply*
Honey locust	Borers	Spray trunks May 15 and repeat three times at 3-week intervals.
	Pod gall midge	Spray early May.
	Plant bugs	When injury is noticed.
Maple	Bladder gall mites	Just before buds break in spring.
	Aphids	When colonies are observed and injury evident.
Oak	Borers	Spray three times at 3-week intervals starting May 25.
Pine	Tip moth	Spray terminals May 20, June 7, and July 10.
	Spider mites	Spray when mites are detected by tapping branch over white paper.
	Pine needle scale	In late May or early June when eggs hatch and 10 days later.
	Zimmerman pine moth	Spray after mid-April and again in late August.
	Sawflies	When feeding is noticed. Spray June, July, and August.
Poplar and Cottonwood	Leaf beetles	When feeding is noticed.
Privet	Borers	Spray May 20, repeat every 3 weeks for four applications.
Spruce	Needle miner	When damage just observed.
	Pine needle scale	When eggs hatch in early June.
	Spider mites	When mites first noticed by tapping branch over white paper.
Walnut	Caterpillars	When insects first appear in June.
Willow	Leaf beetles	When insect first appears.
	Aphids	When colonies observed.
	Scale	When eggs hatch in June.

Hornworms

Appearance. The various hornworms that feed upon trees and shrubs are among the largest caterpillars. Hornworm larvae are usually greenish, often marked with white, and all specimens have either a horn or eye-like structure on the back near the posterior end. Adults are the large moths known as hawk moths.

Type of damage. Larvae consume a great deal of vegetation because of their size. When they become abundant, serious defoliation occurs on host plants.

Plants attacked. Ash, cottonwood, willow, a number of shrubs.

Cecropia moth

Appearance. A larva of this moth attains a length of 3 to 4 inches when fully grown. It is dull bluish-green and has six rows of tubercles (knot-like growths) on its body. The tubercles are red, yellow, and blue. The moth is a handsome specimen, with wing spread up to 6 inches. Each wing bears near its center a crescent-shaped white spot bordered with red.

Type of damage. This moth rarely occurs in sufficient numbers to cause much damage. Each larva consumes a large amount of food in its lifetime.

Plants attacked. Most trees and shrubs.

Sawflies

Appearance. Two species of sawflies are commonly troublesome to shade trees. Elm sawfly larvae are 2 inches long and pale yellowish-white with a black stripe down the middle of the back and a row of black dots on each side of the body. Ash sawfly larvae are about ¾ inch long and dingy white with a shiny black head and dark legs. There are a few spotted or striped sawfly larvae that feed on pines.

Type of damage. Larvae feed on leaves and needles, causing defoliation of the affected tree. The elm sawfly adult causes some damage by girdling twigs.

Plants attacked. Ash, elm, pines.

Leaf miners

Appearance. Many leaf miner larvae attack various conifers, deciduous trees, and shrubs. They are rarely seen because they feed inside the host plant.

Type of damage. Larvae in this group feed under the epidermis, creating zig-zag tunnel patterns on the leaves and needles. Heavy feeding will cause the leaves or needles to dry up and fall off.

Plants attacked. Nearly all conifers, deciduous trees, and shrubs.

Stem, branch, and trunk insects

Pine tip moth

Appearance. Pine trees infested by this pest show damaged terminal growths. The terminal buds turn brown and show evidence of tunneling by the larvae, which feed on buds and new shoots. The larvae are yellowish with brown heads and smooth bodies and average nearly ½ inch long.

Type of damage. Terminal buds turn brown and show larval tunnels.

Plants attacked. Nearly all of the two- and three-needle pines.

Pitch moth

Appearance. Full-grown larvae range in size from ¾ to 1 inch in length. They are light brown with darker heads and a series of black dots along the sides of their bodies.

Type of damage. Trees that are infested show large, irregular patches of pitch which oozes from the borer holes.

Plants attacked. Scotch, Austrian, ponderosa, red, and jack pines that are 2 inches in diameter or larger.

Cottonwood borer

Appearance. Full-grown larvae (the borer stage) attain a length of nearly 2 inches and are white or yellowish with brown heads. The bodies have distinct segments. Adults are black-and-white mottled beetles from 1 1/8 to 1½ inches in length. The antennae or "feelers" are as long as the body.

Type of damage. Larvae attack the tree mainly at the base or just below ground level. The borers often weaken the tree so that it breaks over in a strong wind. This insect can cause considerable damage in shelterbelt plantings.

Plants attacked. Cottonwoods, poplars, willows.

Elm borer

Appearance. Adult beetles are approximately ½ inch long and are grayish-brown, marked with brick-red bands and dark spots. Mature larvae are 1 to 1 1/8 inches long and white. The thorax is quite wide and the abdomen tapers toward the posterior end.

Type of damage. This borer attacks trees that are already weak. Symptoms of attack are the thinning of foliage at the top and dead limbs scattered throughout the tree.

Plants attacked. Elm.

Poplar and willow borer

Appearance. The adults are snout beetles, having the long snout characteristic of weevils. The beetles are approximately ⅓ inch long and are dark brown, mottled with gray. Mature larvae are white, footless grubs about ½ inch long.

Type of damage. Trees infested with this borer show irregular swellings on the branches or trunks. Branches often become so weakened that they die or are blown down by storms. Dark-brown frass (insect excrement and debris) mixed with small splinters often extrudes from the borer holes where it was pushed by the larvae.

Plants attacked. Poplars, willows, alders, red birch.

Bronze birch borer

Appearance. Adult beetles are black with an olive-bronze luster. They are approximately 7/16 to 1/2 inch in length, slender, and somewhat cylindrical in shape. The full-grown larva is cream-white, flattened, without legs, and ¾ inch long. A large, flattened segment can be found immediately behind the head.

Type of damage. Larvae seem to prefer feeding in the sapwood just under the bark. Often the bark becomes loosened by their feeding. Small, rounded exit holes in the bark where adults have emerged are often a good sign of infestation.

Infested trees may die, a branch at a time, or the entire top of the tree may become dead. This borer is a serious pest of birch. Borers—plus drought—have killed the majority of birch trees in eastern South Dakota.

Plants attacked. Birch.

Carpenterworm

Appearance. The adult is a very large moth, with a wing span up to 3 inches across. It is a mottled gray with some darker markings. Larvae vary in size from 1 to 2 inches in length, depending upon age. They are white with very dark brown heads. The body is covered with many prominent, raised portions which are dark brown. The presence of legs on the thorax (the region just behind the head) distinguishes carpenterworms from beetle borers.

Type of damage. Infested trees have large burrows running through the wood. Sawdust is forced through an occasional opening in the bark. Sawdust-like borings at the base of the tree or clinging to the crevices of the bark are the tell-tale signs of an infestation by this tree borer. Larvae feed mainly in the sapwood, although third-year larvae enter the heartwood. The burrows of the insect in the trunk will sometimes be 1 to 1½ inches in diameter. Serious infestations cause much limb breakage in strong winds and may eventually kill the tree.

Plants attacked. American elm, soft maple, bur oak, poplar, but primarily green ash.

Ash tree borer

Appearance. The adult is a clear-winged moth with wing span of approximately 1 inch. The

caterpillar or borer is creamy white and about ¾ inch long when fully grown.

Type of damage. Larvae bore into young trees near the base, weakening the trees so that they may break off in the wind. On lilacs, the borers tunnel under the bark and into the wood, weakening the stems or girdling them and causing the foliage to wilt.

Plants attacked. Ash and lilac.

Bark beetles

Appearance. Larvae are white and legless. They feed on the inner bark and the outside of the wood. Infested trees show galleries on the outside surface of the wood when the bark is removed. Adults are small, brown to reddish beetles, about 1/8 inch in length.

Two important bark beetles in the state are the smaller European elm bark beetle and the native elm bark beetle. Both are carriers of Dutch elm disease, although the European beetle seems to be more important.

Type of damage. Some bark beetles attack healthy trees. Others, such as the elm bark beetles, attack trees already weakened from other causes. Several of the bark beetles that attack conifers are very destructive to mature trees. The Black Hills beetle and the western pine beetle are responsible for the loss of many conifers.

Plants attacked. Elm, hickory, oak, larch, many conifers.

Sucking insects

Aphids or plant lice

Appearance. Aphids are soft-bodied insects with colors varying from greens, reds, and yellows to blacks. Seldom are they ever larger than 1/8 inch long.

Woolly aphids are often not noticed because of the dense, cotton-like masses which cover their bodies. Trees infested with woolly aphids have what look like masses of cotton on leaves, twigs, and branches.

Type of damage. Heavier infestations on plants cause distorted or curled leaves. Many aphids secrete an objectionable liquid (honey-dew). This honey-dew is particularly noticeable on elm trees during summer; often the trees appear to be "weeping." Dark molds, known as sooty molds, often accompany the honey-dew on the leaves.

Plants attacked. Nearly all plants are subject to attack by aphids.

Leafhopppers

Appearance. Leafhoppers are small but very active insects, usually greenish to brownish. Immature leafhoppers (nymphs) run rapidly sideways on the leaves when disturbed.

Type of damage. These pests feed on the undersides of leaves, causing them to turn yellow or brown and dry up. Damage often will appear first on leaf margins and then extend to the midrib.

Plants attacked. Nearly all plants.

Scales

Appearance. Scales (on twigs, branches, and trunks) vary greatly in appearance. All give a "crusted" look to the affected plant portions. Many times the color of the scales blends so well into the color of the twigs or branches that only a close inspection will reveal their presence. The actual insects are underneath the scales which protect them. Some scales, such as pine needle scale, attack the needles of coniferous trees.

Type of damage. Heavy infestations of scales cause leaves to turn yellowish or reddish; eventually, tree branches may die. The bark often cracks, appearing to dry up while on the branches.

Plants attacked. Oystershell scale: ash, poplar, elm, lilac, maple, rose, apple, and many other shade trees and ornamental plants. San Jose scale: apple, crab, hawthorn. Scurfy scale: elm, ash, aspen, maple, willow, and cottonwood. European elm scale: elm. Pine needle scale: pine, spruce, and occasionally firs.

Lace bugs

Appearance. These insects are small, approximately 1/8 inch long, and usually are gray, brown, or black. The wings have a lace-like pattern, the reason for the insect's common name.

Type of damage. Lace bugs feed on the undersides of leaves, sucking sap. Where heavy feeding occurs, leaves appear stippled, pale yellow, or bleached. Often the undersides are spotted with a dark, gummy material.

Plants attacked. Oak, sycamore, rhododendron, hawthorn, azalea.

Spider mites

Appearance. Spider mites are very small and difficult to see without a magnifying lens. They appear as tiny moving specks on the undersides of leaves. When infestations are severe, parts of the plants may become covered with webbing spun by the mites.

Type of damage. Leaves develop a yellowed, speckled color and in severe cases may appear bronzed or rusty. Spider mites develop very rapidly and produce many generations during the warmer periods of summer.

Plants attacked. Nearly all.

Gall formers

Some insects and mites (near relatives of insects) produce galls on trees and shrubs. Some galls may be very striking, while others are less conspicuous. The insect or mite lives inside the gall.

Galls may be found on leaves, stems, twigs, branches, and trunks. Galls are formed by substances produced by the mite or insect which cause the living plant cells to grow abnormally. Damage by gall formers is difficult to determine. Many gall producers lack importance from an economic standpoint.

Authorities estimate that 1,500 kinds or species of gall producers attack plants. Only a few of the common types are included here.

Leaf-stem galls

Appearance. Galls appear as an enlargement on the leaf stem of the tree or shrub. An example of this type is the poplar leaf-stem gall which occurs on cottonwood and poplar and enlarges the stem at the base of the leaf.

Plants attacked. Most deciduous trees and shrubs.

Leaf galls

Appearance. Gall formations vary on the leaves. Some are wart-like, others tube-like, some cone-like. The size of the galls varies as much as the shape. Many of the leaf galls have received common names because of their appearance.

Plants attacked. Nearly all plants are subject to leaf galls of one kind or another.

Bud galls

Appearance. There are many deformities or galls which start from the bud. They will vary from an aborted bud to a large swelling in that area. Bud galls may form many different shapes.

Type of damage. Bud galls prevent buds from developing, or from developing normally. They sometimes affect the growth processes of the plant.

Plants attacked. Conifers, deciduous trees, shrubs.

Branch or trunk galls

Appearance. These galls appear as deformities on the trunks or branches of the tree. They may affect the entire circumference or only one side. Galls may vary from a slight swelling to large lumps. Oak trees have a number of different galls in this category.

A striking condition is "witches'-broom," a condition common on hackberry. The "brooms" are actually branches of small, stunted twigs arising from an enlarged portion of the branch.

Type of damage. Some branch or trunk galls are damaging to the tree. In a few cases galls become so prominent that they are unsightly.

Plants attacked. Many deciduous trees and shrubs.

Cone galls

Appearance. Cone galls appear as cone-like swellings on spruce and juniper. You have to look closely to find them, because in many cases they might be taken for normal cones at first glance.

Type of damage. Although cone galls are not too damaging to the trees, they are unsightly and detract from the appearance of trees used as ornamentals.

Plants attacked. Spruce and juniper.

EC 683, South Dakota Insecticide Recommendation Handbook, gives recommendations for specific insecticides for use on specific pests. See your county Extension agent.

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File: 2.11—5-88—ES 006

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